Yorktown Naval Weapons Station (Cheatham Annex)

York County, Virginia
Superfund Program Site Fact Sheet

Type of Facility: Naval Federal Facility

Funding: Department of Defense
Defense State Memorandum of Agreement

Lead Agency: Navy

Site Description and History

The Naval Weapons Station Yorktown – Cheatham Annex Facility (Cheatham Annex) is a 1,579-acre federal facility located outside of Williamsburg, in York County, Virginia. The facility is located adjacent to the York River approximately 15-miles upstream of the Chesapeake Bay between King Creek and Queen Creek. The primary mission of Cheatham Annex is receiving, storing, packing and shipping of materials to federal facilities on the East Coast and major distribution centers in Europe. Construction on the supply facility began in 1942. Cheatham Annex was commissioned in June 1943 as a satellite unit of the Naval Supply Depot in Norfolk, Virginia to provide bulk storage facilities in the Tidewater, Virginia area. The mission of Cheatham Annex has remained essentially the same since its commissioning.

During World War I, prior to Navy ownership and activity, a portion of the current Navy property was the location of a large powder and shell-loading plant operated by DuPont, commonly referred to as the Penniman Plant. During this time the area included a city of 10,000 people and was named Penniman. The DuPont plant operated for approximately one year, with several years after World War I being used for de-militarization activities. Between 1922/1923 and 1942 the land was in private ownership and was used for farming or left idle.

An Initial Assessment Study (IAS) by the Navy was completed at Cheatham Annex in 1984. This study identified twelve disposal sites and potential contamination areas. Four of the twelve sites were recommended for additional studies. Three of these sites (identified as sites 1, 9, and 11 in the IA) are included as source areas in the NPL proposal of the Cheatham Annex facility. An EPA site inspection (SI) was completed at a portion of the Penniman Shell Loading Plant site in 1999. The EPA SI identified sources that were formerly part of the overall DuPont plant. Four of these sources have been included in the NPL proposal of the Cheatham Annex facility.

Threats and Contaminants

The sampling results collected from the seven sources currently identified at the facility indicate contamination with semi-volatile organic compounds (SVOCs), explosives, and metals. The sources are not fully contained therefore the contaminants may be available to migrate into

adjacent surface waters. Cheatham Annex is located in an area with recreational fisheries. The only fishery sampled to date is Penniman Lake. The sample results indicate that a release of SVOCs and metals has occurred to this fishery. The other potential fisheries affected by onsite sources have not been sampled to date therefore the impact of contaminant migration into these surface waters is unknown at this time.

Current Site Status

An EPA site inspection (SI) was completed at a portion of the Penniman Shell Loading Plant site in 1999. The EPA SI identified sources that were formerly part of the overall Penniman Shell Loading Plant. Four of these sources have been included in the NPL proposal of the Cheatham Annex facility. The Naval Weapons Station Yorktown – Cheatham Annex Facility (Cheatham Annex) was proposed to the NPL on February 4, 2000.

Site 1 – Landfill Near Incinerator: Site 1 is located along the York River behind the former location of the old incinerator. The incinerator has been dismantled. Although the exact date of dismantling is unknown, it is estimated to have occurred between 1989 and 1992. From 1942 to 1951 the landfill was used as a disposal area for burn residues and from 1951 to 1972 as a general landfill. A variety of wastes, including empty paint cans and paint thinner cans, cartons of ether and other unspecified drugs, railroad ties, tar paper, sawdust, rags, concrete, and lumber, were burned and disposed in the landfill until 1981. After this time, the landfill was no longer used. An estimated 15,500 tons of solid waste were buried at the landfill (this is a very crude estimate). The landfill occupies an area of approximately 1.3 acres, including a large metal debris pile.

A large area of debris is present to the north of the landfill. The area contains cables, conex boxes, an empty storage tank, automobiles, airplane/boat parts, and other miscellaneous items. This area was previously designated as AOC 5 – Debris Area, but is currently being managed as part of Site 1. Landfill contents (including metal scrap, wood, drums, containers and other miscellaneous debris) are exposed along portions of the western perimeter of the landfill along the edge of the marsh associated with the unnamed tributary to the York River.

Site 2 – Contaminated Food Disposal Area: This site is located in a grassy area in the woods behind the cold storage warehouse (Building CAD 40). The disposal pit measured approximately 50 feet in diameter and was 12 to 15 feet deep.

Based on the inert nature of the materials that were reportedly buried at Site 2, the site is not considered to be a significant source of contamination.

Site 3 - Submarine Dye Disposal Area: This site is located at the northeastern corner of Building CAD 15. The area is presently used as a storage lot. The dye was stored in 55-gallon drums on two or three pallets located between the warehouses. The drums corroded and dye leaked onto the ground and into the storm sewer system. During rain events, puddles containing a green fluorescein dye were observed. At times, the dye would leak into the storm sewer leading to the York River, turning the river green. The drums were subsequently removed in the early 1970s.

Site 4 – Medical Supplies Disposal Area: Site 4 is located along the pond just upgradient of Youth Pond, between buildings CAD 11 and CAD 12. In 1968 or 1969, out-of-date medical supplies possibly including syringes and empty intravenous (IV) bottles, and one-inch metal banding were unloaded down a bank in this area and covered with soil. It was reported that as much as 7,000 cubic yards of material was disposed at this site. Previously (date unknown), a considerable volume of these materials were reportedly removed from the site because syringe needles were getting stuck in deer hooves. After heavy rains, what appeared to be syringes could sometimes be seen floating in the adjacent pond and in Youth Pond (both upstream and downstream of D Street.) Observations in IAS field notes show that it is possible dyes were disposed of at the site. The location, volume or types of dyes are not known.

Site 5 - Photographic Chemicals Disposal Area: Outdated photographic chemicals (developers and fixers) were reportedly disposed in a pit, which was of unknown dimensions, in 1967 or 1968. Quantities mentioned included "20 to 40 gallons; or one pallet full, which was approximately six months' accumulation." This site was originally a "marl pit" located behind (southeast) of the old DuPont munitions factory area, near Second Street. During the IAS investigation, hand-sketched mapping was prepared that showed site locations. The Photographic Chemicals site is shown on the south end of Second Street and not at the location shown on the final IAS figures.

Site 6 - Spoiled Food Disposal Area: Site 6 is located to the west of the old DuPont ammunition factory. Reportedly, approximately 750 cubic yards of food spoiled in cold storage was buried in a 12 to 15 foot deep pit around 1970. Disposal was not ongoing, and the spoiled food had no hazardous properties. The site was overgrown at the time of the IAS.

Based on the inert nature of the materials that were reportedly buried at Site 6, the site is not expected to be a significant source of contamination.

Site 7 – Old DuPont Disposal Area: In the past, there has been some confusion over the location of Site 7. The IAS report depicts the site behind two recreational cabins along the York River. The Aerial Photographic Analysis, which is also referred to as the EPIC Study, depicts a possible location for Site 7 along Queen Creek, approximately 2,000 feet west of Cheatham Pond. The EPIC Study reports that a possible large, old dump was observed adjacent to Queen Creek in the 1937 photograph with an access road leading from the Penniman Plant to the possible dump. No additional descriptions for this location are presented on the subsequent photographs.

According to the IAS (NEESA, 1984), Site 7 (IAS location) received wastes from the City of Penniman and from the DuPont facility. The wastes were reported to be non-hazardous and/or inert. However, specific information documenting the types and quantities of wastes was not available. E.I. DuPont de Nemours and Company was contacted during the IAS, but specific information regarding disposal practices was not available. The surface of the site was described as level and supporting a variety of grasses. No evidence of stressed vegetation was noted during the IAS. The western, northern, and eastern boundaries of the site are clearly defined by steep banks rising an estimated 10 to 20 feet in elevation

In November 1999 a Field Investigation was conducted at Site 7 to verify the presence of a debris disposal area. One sediment sample was collected from the low lying area to the east of the bermed area. Ten test pits were excavated to confirm the presence of buried debris. Results from the investigation are summarized in the Draft Field Investigation Report. The test pit investigation revealed that debris is buried in the northern portion of the site. Aroclor-1260 was detected in the sediment sample. The Field Investigation Report recommended a follow-up investigation to characterize and define the lateral extent of the debris, determine the source of the PCB detection and assess the impact (if any) to soil, groundwater, and sediment. Based on the findings of the investigation, it is recommended that an EE/CA be completed to determine the appropriate management strategy for the site.

A subsequent shoreline hike along the York River in August of 2000, confirmed that at least one of the Old Dupont disposal sites is located in the vicinity of the two cabins. Munitions related debris was observed on the beach along with many corroded metal parts. The IAS also indicates that ammunition waste was disposed at the site (it is not clear how this determination was made).

There are at least two separate sites. Sources of contamination may be present at both of the sites. Further investigation and possible removal of sources of contamination may be required.

Site 8 - Landfill Near Building CAD 14: Site 8 is located approximately 300 feet north of Building CAD 14 and is estimated to be less than ¼ acre in size. The disposal area reportedly consisted of a series of trenches with typical surface areas of 2,000 feet and depths of 10 feet. The site was used at various times since the early 1940s. The site was most active prior to the opening of the Landfill near the Incinerator (Site 1). It was reported that the site was used for waste disposal as recently as 1980.

Specific information documenting disposal practices is not available. Reportedly, only non-hazardous materials such as spoiled meat, spoiled candy, and clothing have been disposed at the site.

The surface of the site is level and overgrown with tall grasses, and at the time of the IAS, there was no surface evidence of waste and no stressed vegetation was present.

Site - 9 Transformer Storage Area: This site is approximately 7,000 square feet in size and located adjacent to the northwest corner of Building CAD 16. Between 1973 and 1980, electrical transformers, some of which contained PCBs, were reportedly stored at the site. These transformers were awaiting repair or disposal. Between six and thirty transformers were stored at the site at a time. The storage area surface was exposed soil enclosed by an earthen containment wall. Information regarding the number of leaking transformers, the volume of PCB oil stored or spilled is not known. Transformers were no longer stored at the site after 1980 and the area was graded and covered with gravel.

The IAS recommended additional study due to the potential for PCB contamination. The Confirmation Study Step 1A (Verification), Round One (Dames and Moore, 1986) included collection of 13 soil samples from Site 9 for analysis of PCBs and 2,3,7,8- Tetrachlorodibenzo-p-dioxin (TCDD). Arochlor 1260 was the only PCB congener detected (eight of 13 samples).

TCDD was not detected in any samples. Detected concentrations of Arochlor 1260 ranged from 21 micrograms per kilogram (µg/kg) to 321 µg/kg (or 0.021 parts per million [ppm] to 0.321 ppm). No additional sampling was recommended due to the low levels of the detections (as compared to the lowest action level under the Toxic Substance Control Act [TSCA] of 1.0 ppm).

A Draft Final NFRAP Decision Document was submitted for the site in December 1999. The document was reviewed by the VDEQ and USEPA and further investigation and an ecological risk assessment were recommended. Further discussion is required to determine the action to be taken at this site.

Site 10 – Decontamination Agent Disposal Area Near First Street: Site 10 is located south of First Street in the southernmost part of the old DuPont munitions plant. An estimated 75 to 100 gallons of decontamination agent (DS-2) was reportedly buried at the site. DS-2, which is toxic to humans and corrosive to metals, is used for decontaminating equipment contaminated with nerve or blister agents. DS-2 is comprised of 70% diethylene triamine; 28% ethylene glycol monomethyl ether; and 2% sodium hydroxide. It is not know if the DS-2 was neutralized prior to disposal.

At the time of the IAS, the surface of the site was covered with a variety of grasses. No evidence of stressed vegetation was noted and surrounding vegetation and animal life showed no visible adverse effects.

Due to the potential presence of DS-2, the IAS recommended that a magnetometer survey be performed to locate metallic containers of DS-2. Once the existence and location of the containers was confirmed, it was recommended that the containers be excavated and their contents be determined. If leaking containers were discovered, groundwater sampling was recommended.

A magnetometer survey of Site 10 was performed in December 1985. The map shows the anomalic areas in terms of equivalent pounds of iron. While the source of the anomalies may indeed be buried metal, brick, slag, ash, or other disturbances the buried drums could also be the source of the anomalies. The mounds of soil present in the wooded area appeared to contain little iron. The magnetometer survey was summarized in the Final Remedial Investigation Interim Report. The report recommended that historical aerial photographs be reviewed to ascertain additional information about the disposal activities and that a risk assessment be performed.

The Site Investigation for Site 10 was performed in 1992. During the investigation, approximately 20 to 25 small bottles (3 inches high) were found on the edge of the wooded area. The bottles each contained a small volume of unidentified, dry yellow/brown material. The nature and contents of the bottles was not known.

As part of the Site investigation, three monitoring wells were installed within the shallow aquifer. One surface soil sample and three subsurface soil samples were collected from each monitoring well boring. Groundwater samples were collected from each well. Three VOCs (methylene chloride, TCE, and acetone), and one SVOC (chrysene) were detected in soil at low

concentrations (below applicable criteria). TPH levels were elevated in two surface soil samples. Levels of metals were typically near or below background levels.

TPH and SVOCs were not detected in groundwater. The VOC dichloropropane was detected in a duplicate sample at a level above the maximum contaminant level (MCL) but was not detected in any of the environmental groundwater samples. Acetone was detected at a low concentration. Dissolved mercury was detected at levels above the Virginia Groundwater Standards (VGS) in each of the wells but was not detected in any of the unfiltered samples.

The report concluded that the low levels of contamination in soil and groundwater did not appear to be related to DS-2 and were not suspected to be indicative of a significant source of contamination. In general, no clear evidence of drum disposal was found. Re-sampling of the monitoring wells for VOCs and mercury was recommended to confirm the Site Investigation results.

In 1997, as part of the SSP investigation Baker re-sampled the three Site 10 monitoring wells to confirm the Site Investigation results. No organic compounds were detected in groundwater. Dissolved manganese was the only inorganic detected at a concentration above the screening criteria. Mercury was not detected in any (filtered or unfiltered) samples. The SSP included human health and ecological risk screening using data generated under the SI (soil and groundwater) and under the SSP investigation (groundwater): no unacceptable risks were estimated and no additional investigation or remedial action was deemed necessary.

NFRAP status for the site is not currently planned because the source of the detected anomalies has not been determined and the buried containers of DS-2 have not been located. Before the site can be closed out it will be necessary to perform a test pit investigation to identify the source(s) of the anomalies and determine if a removal action or additional remedial activities are warranted. In addition, Site 10 will included in the multi-site screening-level ERA.

Site 11 – Bone Yard: Site 11 encompasses an estimated 8-acre area located approximately 250 ft south of Antrim Road, behind the public works facility. The site was reportedly used between 1940 and 1978. Wastes believed to be deposited at the site include oil, asphalt, and gasoline. A submarine net coating, tar, operation was also reported to have occurred in this area. These wastes were contained in 15 barrels and two 500-gallon aboveground tanks at the time of the IAS. It was reported that unspecified wastes might also be buried at the site.

During the IAS, scrap metal, old containers (fuel oil, mixing tanks, etc), fence posts, and abandoned cars were found inside the gate within an estimated 1-acre area. Various discarded clamshell buckets and other surplus metal objects used in heavy construction were also located throughout the area. Approximately ten 5-gallon containers labeled “paraplastic” (concrete sealant) were also present.

South of the entrance, numerous barrels containing petroleum products were discovered, as well as several 500-gallon square tanks containing asphalt or oil used in making asphalt. These tanks were reported to have leaked in the past.

Numerous tar cylinders were deposited at the end of the road leading into the site. The cylinders had apparently been there for quite a while, as their initial cardboard containers had decomposed and the tar had melted. Numerous pieces of scrap metal and surplus construction equipment were scattered along the path. It was also reported that uncharacterized wastes may have been buried in this area, but this was not confirmed by other reports or signs of stressed vegetation.

Based on descriptions from the IAS, the wastes deposited at this site have included oil, possibly from automobile maintenance and/or fuel oil sludge, gasoline, and asphalt oil from road maintenance supplies.

The Confirmation Study Step 1A (Verification), Round One included collection of three surface water and three sediment samples, and installation of three shallow monitoring wells. Groundwater samples were collected from each of the three monitoring wells. A total of nine soil samples were collected – one composite sample from each of the monitoring well borings, and six discrete samples were collected from locations throughout the site. A total of 18 samples were collected from 15 drums (three of the drums contained a liquid phase which was sampled)

The Confirmation Study Step 1A (Verification), Round Two included collection of three surface water and three sediment samples co-located with the Round One samples, and collection of a second round of groundwater samples from each of the three monitoring wells which were installed during Round One.

The Final Remedial Investigation Interim Report reported that most of the 55-gallon drums and scrap metal had been removed from the site since the IAS. This report, which characterizes the site as more of a scrap yard than burial site, summarized the findings of the Confirmation Study. Significant potentially site-related detections during the Confirmation Study included:

Toluene, 111-TCE, phthalates, PAHs, oil and grease, and lead in soil;

Total phenols, lead, and oil and grease in groundwater;

1,1,1 – TCE, methylethylketone, methylene-chloride (potentially laboratory-related), total phenols, and phthalates (potentially sampling-related) in surface water samples;

1,1,1 –trichloroethane (TCA), lead, and oil and grease in sediment; and,

Leachable lead, cadmium, and barium (as indicated by [EP] toxicity testing) in drum samples.

The report recommended the site for further investigation to better define the nature and extent of contamination at the site.

The Site Investigation for Site 11 (Weston, 1994) included a soil-gas survey, a collection of 14 surface soil samples, an installation of two monitoring wells with soil samples collected from each boring, a collection of groundwater samples from the newly installed and existing monitoring wells, a collection of 16 sediment samples from eight locations, and a collection of five surface water samples.

Significant potentially site-related detections during the Site Investigation included:

Low levels of benzene, toluene, ethylbenzene, xylenes, and total volatile hydrocarbons in soil-gas samples;

TCE, 1,1,1-TCA, toluene, xylene, PAHs, TPHs, lead and several other metals in surface soil;

TPHs, lead and other metals in subsurface soil;

TCE, 1,2 dichloroethene, carbon disulfide, lead and other metals in groundwater;

TCE, 1,2-dichloropropane, iron and manganese in surface water; and,

TPHs, PAHs, arsenic, beryllium, and lead in sediment.

The Site Investigation concluded that previous activities at Site 11 have had some impact on shallow soils, marsh sediments, and lake sediments, but very little to no impact on groundwater and surface water. Potential for further degradation of the environment was minimal. The report recommended that the drums and asphalt tank remaining on site be removed. Confirmation of TCE detections in surface soil, VOCs and dissolved metals in groundwater, and TCE at one surface water sample location was also recommended.

The SSP investigation included collection of an additional round of groundwater samples from each of the Site 11 monitoring wells. No organic compounds were detected. Concentrations of total (unfiltered) metals were significantly lower in the 1997 samples than in previously collected samples due to the employment of low-flow sampling during the SSP investigation. The SSP report concluded that no additional investigations be conducted at Site 11.

At the time of the SSP groundwater investigation (August 1997), approximately 60 drums were noted in the woods along with three tanks that contained tar. Approximately one half of the drums were empty. The remaining drums contained one or a combination of the following: tar, leaves, soil, or sludge. The location of the area containing the tar drums and tanks is shown on Figure 4-11. Industrial Marine Services, Inc. of Norfolk, Virginia removed the drums and tanks from the site in early September 1997. Adding sand prior to removal from the site solidified the tar. Approximately 60 tons of material, including drums, tanks, solidified tar, and miscellaneous scrap/materials was disposed as non-hazardous waste. Rainwater, which had accumulated in the largest tar tank, on top of the tar, was evacuated from the tank via vacuum truck and discharged to Industrial Marine Service's treatment facility at Norfolk, Virginia.

In November 1999, a Field Investigation was conducted at Site 11 to determine soil conditions within the area of the 1997 removal of tar drums/tanks. A total of six surface soil and six subsurface soil samples were collected.

The Draft Removal Closeout Report summarizes removal activities that have occurred at Site 11 – Bone Yard. In November 1999, Baker conducted confirmatory sampling at Site 11 at the request of VDEQ.

At the time of the previous investigations it was believed that the tar was previously used for roofing or paving. However, Baker has recently learned from anecdotal accounts that the site and surrounding area was the former location of a marine netting/cable coating operation.

Site 12 – Disposal Site Near Water Tower: Site 12 is located approximately 2000 feet west of Jones Pond. The site was used for surface disposal of scrap metal; primarily old automobile parts and iron pipe. Based on visual inspection of the site approximately 10 to 110 cubit feet of material was disposed at the site.

The EPIC Study (USEPA, 1998) indicates that a small mound of dark-toned material is present at the site in 1955, but not present in 1963. It is not clear from the IAS whether the debris was present at the time of the IAS, or if it had already been removed. The debris is no longer present at the site. One possibility is that the debris was relocated to one of the nearby unnamed tributaries to Jones Pond. Large quantities of debris are present in these tributaries in the areas that AOC 1 – Scrap Metal Dump currently occupy. Debris similar to that described for Site 12 in the IAS is visible in these areas.

Based on the inert nature of the materials that were reportedly disposed of or stored at Site 12, the site is not considered to be a significant source of contamination.

AOC 1 – Scrap Metal Dump: AOC 1 is a debris disposal area located just west of Chapman Road within two ravines associated with unnamed tributaries to Jones Pond. Wood and metal debris outcrop from the banks of the ravines, with debris being more extensive within the southern ravine. There is orange staining in the unnamed tributary that receives runoff from the southern ravine. This discoloration may be a result of natural oxidation processes and is not necessarily indicative of site contamination. This location was designated as an AOC in 1998 following site visits by LANTDIV, USEPA, and VDEQ representatives.

Two cylinders are present along the top of bank along the northern ravine From information presented in the September 30, 1998, letter from Mr. Robert McGlade (Roy F. Weston), the two cylinders, which are 8 inches in diameter and 54 inches long, are severely corroded. Markings were distinguishable on both of the cylinders, and included raised lettering around the neck "THE LIQUID CARBONIC CO." The cylinders have intact valves and welded base supports.

AOC 1 is not specifically identified in the EPIC Study. However, in 1942, the area had been cleared of trees and contained a large mound of light-toned material. The adjacent rail yard was under construction at the time. In 1955, the area was partially revegetated, and in 1963 a large mound of fill was noted. By 1975, the area appeared to be revegetated.

In November 1999 a Field Investigation that included a geophysical survey and collection of soil, surface water and sediment samples was performed. VOCs, SVOCs, pesticides, PCBs, inorganics, and cyanide were detected in the surface soil samples. SVOCs and inorganics were

detected in the surface water at low levels. VOCs, SVOCs, PCBs, and inorganics were detected in the sediment samples. The extensive volume of debris at the AOC is a potential source of contamination.

The Draft Site Inspection Report recommended that a limited investigation to evaluate disposal parameters be performed. In addition, an EE/CA was recommended to evaluate the most appropriate means of removing or covering the debris that is present at the site.

AOC 2 – Dextrose Dump: AOC 2 was discovered during site visits performed by LANTDIV, USEPA, VDEQ, and Baker in late 1997 and early 1998. The area is situated in woods, north of Garrison Road, along the southern perimeter of CAX. The area contains several rows of concrete foundation piers which at one time apparently supported a Shipping House associated with the former Penniman Shell Loading Plant. The majority of the structures associated with the Penniman facility was demolished somewhere between 1918 and 1925. There is no evidence of the structure other than the foundation piers. However, grass-covered lanes that lead to the area are likely locations of former rail lines that have been removed. Several glass bottles (many of that are labeled dextrose) were present both upon the ground surface and partially buried. In addition, several partially buried drums (apparently empty) were also noted. Mounds of soil that are present may also be indicative of buried materials. One buried drum (which can be seen through a void in the ground) is present to the east of the abandoned foundation. It is suspected that additional buried drums may be located in this area.

During May 1998, Reactives Management, Inc. removed a total of 470 bottles from the site as part of a routine housekeeping operation. Approximately 5 percent of the bottles (24 bottles) were selected randomly and analyzed. Each bottle contained greater than 2,000-ppm glucose indicating that the bottles did contain dextrose, as suspected. The contents of the bottles were emptied into the Hampton Roads Sanitation District (HRSD) sanitary sewer system. The bottles were rinsed, allowed to dry, and transported to a local glass recycling facility. This operation was limited to bottles present at the surface. Partially buried bottles are still present at the surface.

In 1998, Baker performed a Field Investigation for AOC 2 that consisted of a geophysical survey, and soil and groundwater investigations (including installation of temporary monitoring wells). VOCs, pesticides and inorganics were detected in the soil samples at low levels. SVOCs and inorganics were detected in groundwater samples at low levels. The presence of these constituents was not suspected to be related to site activities.

The Field Investigation Report recommended that the sources of the geophysical anomalies and potential sources of contamination be identified by excavating a total of six shallow test pits in the vicinity of the most significant anomalies detected.

In November 1999 Baker performed a Field Investigation that included test pits and exploratory hand auger borings to define the lateral extent of buried debris at the site. Samples of native soil and soil within the debris zones were collected. During the investigation, a large volume of buried drums and respirator filter canisters were encountered. A few of the drums contained a thin layer of tar coating or residue. The remaining drums were empty. One sample of tar was

collected and submitted for laboratory analysis of chemical warfare materials (CWM) and degradation products. No CWM-related constituents were detected and the sample was determined to consist of a heavy hydrocarbon material (i.e., tar). One of the respirator cartridges was submitted for Toxicity Characteristic Leachate Procedure (TCLP) analysis and determined to be hazardous due to elevated cadmium and lead.

In the Draft Field Investigation Report, additional geophysical surveying with confirmatory test pitting was recommended to further delineate the extent of buried debris, with emphasis placed on locating areas of buried respirator cartridge canisters. Based on the findings of the investigation, it was recommended that an EE/CA be completed to determine the appropriate management strategy for the site.

AOC 3 – CAD 11/12 Pond Bank: AOC 3 consists of an approximately 20 foot by 20 foot by 10 foot high pile of metal banding along the north bank of the unnamed pond, north of D Street. The pond is situated between Buildings 11 and 12. This area, which also contains a few empty drums, is adjacent to Site 4. LANTDIV, USEPA, and VDEQ representatives designated this location as an AOC in 1998 following site visits.

During the 1999 Field Investigation two soil samples and two sediment samples were collected immediately adjacent to the metal banding pile. This area will be managed separately from Site 4. The samples collected during the 1999 Field Investigation were intended to determine if future investigation is warranted and to confirm that there are no sources of contamination present within the pile so the pile can be removed as part of a housekeeping measure, rather than under a removal action.

Penniman AOC: There currently are five sub-areas within this AOC, additional sites may be added as investigations proceed.

Ammonia Settling Pits – This area consists of earthen ammonia settling pits that were part of a former shell loading area located on Cheatham Annex. Wastewater from an ammonia finishing building was discharged through these settling pits.

TNT Graining House Sump & *TNT Catch Box Ruins* – These areas consists of a concrete-lined, open top pit believed to be the sump pit for the Trinitrotoluene (TNT) graining house in the former shell loading area. The catch box ruins area consists of an earthen, brick-lined depression located immediately adjacent to the TNT graining house in the former shell loading area. This area was used to separate TNT particles from wastewater. Both sites are located near the dam at Penniman Lake.

Waste Slag Material – This area consists of waste metallic slag material that is located throughout the shell loading area predominantly along the railroad tracks.

1918 Drum Storage – This area was used for the storage of 55-gallon drums when the shell loading area was active. The site is currently a yard area around facility buildings.

These five sub-areas have not yet been investigated.

Community Relations

Cheatham Annex has combined with Naval Weapon Station Yorktown's Restoration Advisory Board (RAB). RAB meetings are held Quarterly at York County's Charles E. Brown Park.

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